

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Yoshitsugu MORITA, et al. Confirmation No.: 7050
Serial No.: 10/526,184
Filed: March 1, 2005
Group Art Unit: 1618
Examiner: Westerberg, N. M.
For: AQUEOUS EMULSION COMPRISING AN ORGANOSILICON
POLYMER, PROCESS FOR PRODUCING THE SAME, AND
COSMETIC MATERIALS

DECLARATION UNDER 37 CFR § 1.132

MAILSTOP: AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

I, Yoshitsugu Morita, hereby state that:

1. I am a citizen of Japan.
2. I have a master degree from Osaka University in Osaka Japan. I am currently employed in a S&T role for Dow Corning Toray Co., Ltd. of Tokyo, Japan. I have worked in the silicone field for 30 years and I have been employed by Dow Corning Toray Co., Ltd. for the past 30 years.
3. I am the first named and joint inventor of the pending U.S. Patent Application, Serial No. 10/526,184, and am a person skilled in the art of silicones including silicone compositions and, in particular, aqueous emulsions and cosmetic materials including such

aqueous emulsions.

4. In the present application, the invention, which is an aqueous emulsion including as the disperse phase a mixture of (A) a linear organosilicon polymer whose main chain is composed of diorganosiloxane units and alkylene units and (B) an oil that is liquid at room temperature and does not contain hydrosilation-reactive groups. The weight ratio of component (A) to component (B) in the mixture is 1:0.5 to 1:50.

5. I am aware of, have read, and understand the disclosure of U.S. Patent No. 6,013,682 to Dalle et al. (the '682 patent), which is entitled "METHOD OF MAKING SILICONE IN WATER EMULSIONS."

6. I am aware of, have read, and understand the disclosure of U.S. Patent No. 6,143,310 to Sang et al. (the '310 patent), which is entitled "COSMETIC COMPOSITIONS."

7. I am aware of, have read, and understand the disclosure of Lockheed, Robert Y., "Encyclopedia of Polymers and Thickeners for Cosmetics," Cosmetics and Toiletries, 108 (1993) (Lockhead et al.)."

8. For the reasons described in Paragraphs 9-21 immediately below, the invention in the present application is unique and distinguishable from the teachings of the '682 patent, the '310 patent and Lockheed et al. individually and/or in combination. Specifically, there is no teaching or disclosure whatsoever in the '682 patent which would cause a person of skill in the art, such as myself, to form an aqueous emulsion including (A) a linear organosilicon polymer whose main chain is composed of diorganosiloxane units and alkylene units and (B) an oil that is liquid at room temperature and does not contain hydrosilation-reactive groups in a weight ratio of component (A) to component (B) of from

1:0.5 to 1:50.

9. I recognize that the '682 patent discloses an organosilicon polymer which is formed from mixing a dimethylvinylsiloxy terminated polydimethylsiloxane, a liquid organohydrogenpolysiloxane having the average formula $\text{Me}_2\text{HSiO}(\text{Me}_2\text{SiO})_{20}\text{SiMe}_2\text{H}$, platinum in a platinum catalyst, an emulsifier, and water.

10. I also recognize that the '310 patent discloses cyclic dimethylsilicone, linear polydimethylsiloxanes and polydimethylphenylsiloxane, which are free from hydrosilation reactive groups and liquids at 25 °C.

11. I further recognize that Lockheed et al. discloses dimethicone fluid, which is free from hydrosilation reactive groups and a liquid at 25 °C. Dimethicone fluid is well known by those skilled in the art, and is commonly referred to as polydimethylsiloxane.

12. *However*, although the '682 patent discloses an organosilicon polymer and the '310 patent and Lockheed et al. disclose silicone oils, respectively, there is no reason whatsoever that one of skill in the art would expect the advantageous physical properties obtained from an aqueous emulsion including (A) a linear organosilicon polymer whose main chain is composed of diorganosiloxane units and alkylene units and (B) an oil that is liquid at room temperature and does not contain hydrosilation-reactive groups in a ratio of Component (A) to Component (B) of from 1:0.5 to 1:50.

13. In particular, the aqueous emulsion of the present invention has excellent physical properties. For example, in Examples 1-3 of the '682 patent, an organosilicon polymer is formed from mixing a dimethylvinylsiloxy terminated polydimethylsiloxane, an organohydrogenpolysiloxane having the average formula $\text{Me}_2\text{HSiO}(\text{Me}_2\text{SiO})_{20}\text{SiMe}_2\text{H}$,

platinum in a platinum catalyst, an emulsifier, and water. Similarly, in Comparative Example 1 of the present application, an organosilicon polymer is formed from dimethylvinylsiloxy terminated dimethylpolysiloxane, dimethylhydrogensiloxy terminated dimethylpolysiloxane, a surface active agent, a platinum catalyst, and water. Thus, Examples 1-3 of the '682 patent correspond with Comparative Example 1 of the present application. As set forth in Table 1 of the present application, the mixture of Comparative Example 1 was not homogenous and its viscosity could not be measured via a rotary viscometer.

14. Conversely, in Practical Example 1 of the present application, an organosilicon polymer is formed from dimethylvinylsiloxy terminated dimethylpolysiloxane, dimethylhydrogensiloxy terminated dimethylpolysiloxane, a surface active agent, a platinum catalyst, and water. An emulsion is formed from this organosilicon polymer and a triethylsiloxy terminated dimethylpolysiloxane in water. The emulsion was homogenous and had excellent dispersibility in water, as set forth in Table 1. Thus, Table 1 of the present application illustrates the advantages and surprising results of forming an aqueous emulsion including (A) a linear organosilicon polymer whose main chain is composed of diorganosiloxane units and alkylene units and (B) an oil that is liquid at room temperature and does not contain hydrosilation-reactive groups (corresponding to Practical Example 1) as compared with an emulsion of merely a linear organosilicon polymer whose main chain is composed of diorganosiloxane units and alkylene units (corresponding to Comparative Example 1 of the present invention and Examples 1-3 of the '682 patent).

15. In addition, in Comparative Example 4 of the present application, an emulsion was formed from a trimethylsiloxy terminated dimethylpolysiloxane, a surface active agent,

and water. The trimethylsiloxy terminated dimethylpolysiloxane is an oil that is liquid at room temperature and does not contain hydrosilation-reactive groups, i.e., corresponds to component (B) of the invention. The emulsion was not homogenous and had an undesirable dispersibility in water, as set forth in Table 1.

16. There is no reason whatsoever that one of skill in the art, such as myself, would combine the emulsion of Comparative Example 1 of the present invention, which corresponds to the '682 patent, with the emulsion of Comparative Example 4 of the present invention, which corresponds to the '310 patent and/or Lockhead et al. Because the physical properties of each respective emulsion are undesirable, there is no reason whatsoever that one of skill in the art would expect a mixture of (A) a linear organosilicon polymer whose main chain is composed of diorganosiloxane units and alkylene units and (B) an oil that is liquid at room temperature and does not contain hydrosilation-reactive groups to have excellent physical properties.

17. In addition, the cosmetic composition of the invention has excellent and unexpected physical properties. In particular, in Practical Examples 7 and 8, the aqueous emulsions of Practical Examples 1-4 were applied onto skin and utilized as a hair treatment, respectively. As set forth in Table 2, the aqueous emulsions of Practical Examples 1-4 had, when applied onto skin, excellent smoothness and no sensation of tackiness. In addition, the aqueous emulsions of Practical Examples 1-4 had, when utilized as hair treatment, excellent adhesion to hair as well as excellent smoothness and moistness.

18. Conversely, the emulsion of Comparative Example 1, which did not include Component (B) of the present invention, had no smoothness when applied onto skin. In

addition, the emulsion of Comparative Example 1 had merely half of the adhesion to hair as the aqueous emulsions of Practical Examples 1-4. Finally, the emulsion of Comparative Example 1 had undesirable smoothness and moistness when utilized as a hair treatment.

19. Further, the emulsion of Comparative Example 4, which did not include Component (A) of the present invention, had undesirable smoothness and tackiness when applied onto skin. In addition, the emulsion of Comparative Example 4 had merely half of the adhesion to hair as the aqueous emulsions of Practical Examples 1-4. Finally, the emulsion of Comparative Example 4 had no moistness and undesirable smoothness when utilized as a hair treatment.

20. Because, for the reasons set forth in Paragraphs 13-19 above, the physical properties of emulsions formed from either Component (A) or Component (B) of the invention had undesirable properties, there is no reason whatsoever that one of skill in the art would expect an emulsion including Components (A) and (B) to have excellent physical properties. I can find nothing in the '682 patent, the '310 patent, or Lockheed et al. that teaches the advantages of an aqueous emulsion including both (A) a linear organosilicon polymer whose main chain is composed of diorganosiloxane units and alkylene units and (B) an oil that is liquid at room temperature and does not contain hydrosilation-reactive groups.

21. Therefore, after closely analyzing the '682 patent, the '310 patent, and Lockheed et al., one of skill in the art, such as myself, would have no reason whatsoever to expect the physical properties obtained from an aqueous emulsion of (A) a linear organosilicon polymer whose main chain is composed of diorganosiloxane units and alkylene units and (B) an oil that is liquid at room temperature and does not contain hydrosilation-

reactive groups, as claimed as the invention.

Conclusion

22. As a result of my review of the '682 patent, the '310 patent, and Lockhead et al., and also as a result of my understanding from a perspective of a person skilled in the art, the invention as claimed at the time of filing the patent application presented, and still presents, significant differences from the '682 patent, the '310 patent, and Lockhead et al.

23. In addition, the '682 patent only broadly discloses organosilicon polymers meeting Component (A), which were already well known in the art. Further, the '310 patent and Lockhead et al. only broadly disclose oils meeting Component (B), which were also already known in the art. However, I would have no reason whatsoever to select an organosilicon polymer from the '682 patent and an oil from either the '310 patent or Lockhead et al. to form an aqueous emulsion including (A) a linear organosilicon polymer whose main chain is composed of diorganosiloxane units and alkylene units and (B) an oil that is liquid at room temperature and does not contain hydrosilation-reactive groups, as in the invention. Further, I would have no reason to expect the excellent physical properties of such an aqueous emulsion.

24. I hereby declare that all statements made herein of my own knowledge are true

and that all statements made on information are believed to be true, and further that these statements were made with the knowledge that willful and false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or patent issued thereon.

Respectfully submitted,

March 24, 2009

Dated

Yoshitsugu Morita

Yoshitsugu Morita